

WHAT IS CLAIMED IS:

1. A probe, comprising:

a probe body having a body longitudinal axis and a shoulder;
and
a microstylet ^{metal needle} mechanically coupled to and extending from the shoulder and having a microstylet longitudinal axis coincident the body longitudinal axis, the microstylet having a cross section substantially smaller than a cross section of the probe body.

2. The probe as recited in Claim 1 wherein the microstylet comprises an acerate microparticle selected from the group consisting of:

a carbon whisker;
a metal needle; and
a diamond.

3. The probe as recited in Claim 1 wherein the carbon nanotube is a single-walled carbon nanotube or a multi-walled carbon nanotube.

4. The probe as recited in Claim 1 wherein the probe body comprises a tube.

5. The probe as recited in Claim 1 wherein the probe body
2 comprises a glass tube.

6. The probe as recited in Claim 1 wherein a portion of the
2 microstylet resides within the probe body.

7. The probe as recited in Claim 1 wherein the shoulder
includes a fastigate shoulder.

narrow towards top

8. The probe as recited in Claim 1 wherein the probe is a
2 field emitter, a micromanipulator or a microinjector.

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9. A method of manufacturing a probe, comprising:

providing a hollow probe body having a body longitudinal axis
and an inner wall;

filling at least a portion of the hollow probe body with a
suspension including microstylets;

drawing the portion to align a longitudinal axis of at least
one of the microstylets with the body longitudinal axis; and

exposing the at least one of the microstylets.

10. The method as recited in Claim 9 wherein exposing
includes etching an end of the portion.

11. The method as recited in Claim 10 wherein the etching
includes a first etch and a second etch.

12. The method as recited in Claim 9 further comprising
sealing an end of the probe body prior to the filling.

13. The method as recited in Claim 9 wherein filling includes
filling wherein the microstylets are selected from the group
consisting of:

a carbon nanotube;

a carbon whisker;

6 a metal needle; and
7 a diamond.

14. The method as recited in Claim 13 wherein filling
2 includes filling wherein the carbon nanotube is a single-walled
3 carbon nanotube or a multi-walled carbon nanotube.

15. The method as recited in Claim 9 wherein filling includes
2 filling with a suspension further comprising a menstruum having
3 high volatility.

16. The method as recited in Claim 15 further comprising
2 evaporating the menstruum to cause the microstylets to adhere to
3 the inner wall.

17. The method as recited in Claim 15 wherein filling
2 includes filling wherein the menstruum is a low carbon number
3 alcohol.

18. The method as recited in Claim 17 wherein filling
2 includes filling wherein the low carbon number alcohol is selected
3 from the group consisting of:
4 methyl alcohol;

5 ethyl alcohol; and
6 isopropyl alcohol.

19. The method as recited in Claim 9 wherein drawing includes
2 applying a force aligned with the body longitudinal axis to an end
3 of the probe body.

20. The method as recited in Claim 9 wherein drawing includes
2 applying heat to the portion.

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21. A probe, comprising:

a probe body having a body longitudinal axis and a shoulder;

and

a carbon nanotube mechanically coupled to and extending from the shoulder and having a carbon nanotube longitudinal axis coincident the body longitudinal axis, the carbon nanotube having a cross section substantially smaller than a cross section of the probe body.

22. The probe as recited in Claim 21 wherein the carbon nanotube is a single-walled carbon nanotube or a multi-walled carbon nanotube.